

ACTIVE VIBRATION COMPENSATION FOR MRI GRADIENT COIL SUPPORT TO REDUCE ACOUSTIC NOISE IN MRI SCANNERS

ABSTRACT OF THE INVENTION

The present invention provides an apparatus for reducing acoustic noise in a magnetic resonance imaging device including a suspension element including at least one resilient element and an active drivable element for applying a compensating force to reduce vibration transmission. The active drivable element is positioned so as to not directly support the weight of the gradient coil assembly, which avoids applying strong forces to relatively fragile active drivable elements, such as piezoelectric force transducers. Force signals for the active drivable element are derived in a feed-forward manner from the applied gradient waveform or from motion of the gradient coil assembly bracket. Alternatively, the active drivable element can be driven by signals derived from measured vibration or other motion of parts of the MRI magnet, gradient coils or rf coils.